

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
1	Dairy Emissions	June 2009	Drafting Report

Report Location

Project Name

National Air Emissions Monitoring (NAEMS) Project: Air Emissions from California Dairies

Project Description

Accurately assess emissions from livestock operations and compile a database for estimation of emission rates, promote a national consensus for emissions-estimation methods/procedures from livestock operations. Includes monitoring of VOCs and GHG emissions at a commercial dairy using open-path Fourier transform infrared (OP-FTIR) analyzer

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	Ag Air Research Council (AARC)	\$250,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Status update as of May 2008

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
2	Dairy Emissions	May 2009	Drafting Report

Report Location

Project Name
Air Emissions from California Dairies, Part I (NAEMS Add-on) [Includes monitoring of VOCs and GHG emissions using open-path Fourier transform infrared (OP-FTIR) analyzer]

Project Description
Accurately assess emissions from livestock operations and compile a database for estimation of emission rates, promote a national consensus for emissions-estimation methods/procedures from livestock operations. Includes monitoring of VOCs and GHG emissions at a commercial dairy using open-path Fourier transform infrared (OP-FTIR) analyzer

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	ARB	\$40,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
Y. Zhao	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
Status update as of May 2008

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
3	Dairy Emissions	May 2009	Drafting Report

Report Location

Project Name
Air Emissions from California Dairies, Part II
Project Description
Accurately assess emissions from livestock operations and compile a database for estimation of emission rates, promote a national consensus for emissions-estimation methods/procedures from livestock operations. Includes monitoring of VOCs and GHG emissions at a commercial dairy using open-path Fourier transform infrared (OP-FTIR) analyzer

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	CDFA	\$70,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
Y. Zhao	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
Status update as of May 2008

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
4	Dairy Emissions	May 2009	Drafting Report

Report Location

Project Name
Air Emissions from California Dairies, Part III

Project Description
Accurately assess emissions from livestock operations and compile a database for estimation of emission rates, promote a national consensus for emissions-estimation methods/procedures from livestock operations. Includes monitoring of VOCs and GHG emissions at a commercial dairy using open-path Fourier transform infrared (OP-FTIR) analyzer

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	UC Davis, College of Ag and Env'al Sciences	\$40,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
Y. Zhao	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
Status update as of May 2008

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
5	Dairy Emissions	July 2008	Draft Final Report

Report Location

Project Name

Process-Based Farm Emission Model to Estimate Air Emissions from California Dairies

Project Description

Using biological principles and engineering studies, develop a feed/waste stream process-based dairy farm emission model for VOC emissions.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
R. Zhang	UC Davis	ARB	\$284,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
F. Mitloehner	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
A. Goldstein	UC Berkeley		

Related info 1

Project description at <http://www.arb.ca.gov/ag/caf/RuihongZhangDairySymposiumOct06.pdf>

Related info 2

Draft report under review as of October 2009

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Project ID	Project Type	Estimated Completion Date	Status
6	Dairy Emissions	January 2007	Completed

Report Location preliminary data available at: <ftp://ftp.arb.ca.gov/carbis/ag/agadvisory/krauter05jan26.pdf>

Project Name

Dairy Air Quality Monitoring of ROG and Ammonia in the Central Valley of California

Project Description

Maintain staffing and supplies for field and laboratory work to continue the ARB funded ROG project until 2006

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Krauter	CSU Fresno	CSU Agricultural Research Initiative	\$208,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
D. Goorahoo	CSU Fresno	ARB	
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
B. Goodrich	CSU Fresno	SJVAPCD	

Related info 1

<http://www.epa.gov/ttn/chief/conference/ei15/session6/beene.pdf>

Related info 2

http://www.epa.gov/ttn/chief/conference/ei14/session1/goorahoo_pres.pdf

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Project ID	Project Type	Estimated Completion Date	Status
7	Dairy Emissions	June 2006	Partially complete

Report Location	http://www.epa.gov/ttn/chief/conference/ei15/session6/beene.pdf
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Project Name
Evaluating Dairy Ammonia, Methane, and Hydrogen Sulfide Emissions Using Tunable Diode Lasers

Project Description
Develop real-time methods for evaluating process and time specific emission profiles for NH ₃ , CH ₄ , and H ₂ S at dairies. A program to monitor ammonia emissions using the USEPA Emission Isolation Flux Chamber began in 2006 and will continue through 2008. [No updates since 2006.]

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
D. Goorahoo	CSU Fresno	CSU Agricultural Research Initiative	\$98,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
C. Krauter	CSU Fresno	ARB	
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
B. Goodrich	CSU Fresno	Boreal Lasers	

Related info 1
http://www.4cleanair.org/Documents/APCODetermination.pdf

Related info 2
Abstract on page 9 at this site: http://www.epa.gov/ttn/chief/conference/ei14/final2005.pdf

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Project ID	Project Type	Estimated Completion Date	Status
8	Dairy Emissions	June 2008	Completed

Report Location	ARB Library - http://www.arb.ca.gov/research/apr/past/04-343.pdf
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Project Name
Dairy Operations: An Evaluation and Comparison of Baseline and Potential Mitigation Practices for Emissions Reductions In the San Joaquin Valley
Project Description
Project is designed to obtain data needed to better estimate baseline dairy emissions and to estimate the emission reductions achievable with available control technologies.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Krauter	CSU Fresno	ARB	\$250,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
D. Goorahoo	CSU Fresno	possible matching funds - CSUS Fresno Agricultural Research Initiative	\$250,000
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
B. Goodrich	CSU Fresno		

Related info 1
http://www.epa.gov/ttn/chief/conference/ei15/session6/beene.pdf

Related info 2
Continuation of previous work

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Project ID	Project Type	Estimated Completion Date	Status
9	Dairy Emissions	December 2006	Completed

Report Location
http://www.arb.ca.gov/ag/caf/FrankMitloehnerDairySymposiumOct06.pdf

Project Name
Air Emission Mitigation Techniques and Technologies for California Dairies
Project Description
Evaluate dairy PM10, 2.5, VOC, and ammonia emission mitigation practices for potential effectiveness. Includes lagoon and corral areas.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	Merced County via SWRCB and UC matching	\$600,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
R. Zhang	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
P. Robinson	UC Davis		

Related info 1
Project objective described in PowerPoint at: ftp://ftp.arb.ca.gov/carbis/ag/agadvisory/mitloehner05jan26.pdf

Related info 2
SJVAPCD Aug. 2005 VOC Emission Factors for Dairies, http://www.4cleanair.org/Documents/APCODetermination.pdf

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Project ID	Project Type	Estimated Completion Date	Status
10	Dairy Emissions	June 2005	Completed

Report Location
http://jeq.sciijournals.org/cgi/content/full/37/2/615

Project Name
Volatile Organic Compound (VOC) Emissions from Cows Fed Typical California Rations

Project Description
Measurements of alcohols, volatile fatty acids, phenols, and methane (CH ₄) emitted from nonlactating (dry) and lactating dairy cows and their manure under controlled conditions. The experiment was conducted in an environmental chamber that simulates commercial concrete-floored freestall cow housing conditions. The fluxes of methanol, ethanol, and CH ₄ were measured from cows and/or their fresh manure.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	US EPA	\$75,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
B. Flocchini	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
P. Robinson	UC Davis		

Related info 1
http://www.4cleanair.org/Documents/APCODetermination.pdf

Related info 2
UCD Dairy Air Quality Symposium presentation 10-11-06 available at: http://www.arb.ca.gov/aa/caaf/FrankMitloehnerDairySymposiumOct06.pdf

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Project ID	Project Type	Estimated Completion Date	Status
11	Emissions Mitigation	June 2007	Completed

Report Location	Paper is presented in the book, "Dairy Manure Management: Treatment, Handling, and Community Relations". Available for \$42 at: http://www.nraes.org/nra_order.taf?_function=detail&pr_id=48&_UserReference=8429860989D767704899E01F
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Project Name
Effects of Liquid Dairy Manure Aeration on Air Quality and Nutrient Cycling
Project Description
This project will evaluate the air and water emission mitigation effects of a wastewater treatment technology for California dairies to determine whether/to what extent aerobic treatment systems can cost-effectively reduce environmental impacts associated with manure storage.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Collar	UCCE - Kings County	UC ANR	\$30,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
F. Mitloehner	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
J. McGarvey	USDA - ARS	UCCE	

Related info 1

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
12	Dairy Waste	2006	Completed

Report Location	Abstract available at: http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=195211
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Project Name
Characterization of Dairy Waste Management Strategies with Regard to Pathogens and Air Quality
Project Description
Examine the effect that aerobic and anaerobic treatments have on the microbiological and chemical properties of waste.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	USDA - ARS	\$30,300
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
R. Zhang	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
13	Dairy Emissions	September 2009	In progress

Report Location	Several study presentations, see below; no final report located.
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Project Name
Estimating and Reducing Air Emissions from Dairy Feeding Operations
Project Description

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	USDA - CSREES	\$278,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
R. Zhang	UC Davis	USDA - ARS	
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
C. Krauter	CSU Fresno	CSU Fresno	

Related info 1
http://www.ag.iastate.edu/wastemgmt/Mitigation_Conference_proceedings/CD_proceedings/Animal_Housing-Treatment/Calvo-Freestall_housing.pdf

Related info 2
http://www.airquality.nrcs.usda.gov/AAQTF/Documents/200809_201008/200905_FresnoCA/01_Zhang_AAQTF_200905.pdf

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Project ID	Project Type	Estimated Completion Date	Status
14	Dairy Nutrient	June 2008	Completed
Report Location	http://californiaagriculture.ucanr.org/landingpage.cfm?article=ca.v061n02p90&abstract=yes		

Project Name
Nutrient Balances in California Dairy Herds
Project Description

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
A. Costillo	UCCE Merced	UC ANR	\$40,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
F. Mitloehner	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
D. Bacon	UCCE Tulare		

Related info 1
Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
15	Dairy Emissions	March 2008	Completed

Report Location	http://www.extension.org/pages/Environmental_Responses_to_Dietary_Monensin_in_Lactating_Dairy_Cows
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Project Name

Effects of Dietary Rumensin® on GHG and VOC Emissions from Lactating Dairy Cows

Project Description

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	Eli Lilly-Elanco	\$50,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
E. DePeters	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
J. MacGarvey	USDA - ARS		

Related info 1

Hamilton, S.W., E.J. DePeters, J.A. McGarvey, J. Lathrop, and F.M. Mitloehner. 2010. Greenhouse Gas, Animal Performance, and Bacterial Population Structure Responses to Dietary Monensin Fed to Dairy

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
16	Education Study	May 2010	In Progress

Report Location

Project Name
Western Region Dairy Odor and Air Quality Education

Project Description
The goal of this Professional Development Program grant is to reduce the environmental impacts of dairy farming in the West as a way to promote and guarantee the sustainability of the milk and cheese industries. The grant recipients plan to train agricultural professionals, selected from around the dairy producing areas of the Western region, on the best management practices available to dairy producers to mitigate the degradation of air quality. Four hands-on workshops will be conducted, introducing

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
P. Ndegwa	WSU	USDA - SARE	\$89,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
F. Mittloehner	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
R. Sheffield	Univ. of Idaho		

Related info 1
Other researchers from NM State (R. Hagevoort) and OSU (M. Gamroth)

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
18	Livestock Study	January 2008	Draft Report

Report Location	Report submitted for publication
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Project Name
Volatile Organic Compound and Greenhouse Gas Emissions from Growing and Finishing Feedlot Steers and Their Waste
Project Description
To quantify volatile organic compounds (alcohols, volatile fatty acids, amines, and phenols) and greenhouse gas (methane, nitrous oxide, and carbon dioxide) emissions from receiving, growing and finishing feedlot steers (enteric fermentation) and fresh waste using environmental chambers at UC Davis.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	California Cattlemen Assoc.	\$169,590
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
S. Trabue	USDA - ARS	California Feeder Council	\$0
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
			\$0

Related info 1
Costs to be split between the two funding sources

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
19	Equipment Study	December 2006	Unknown

Report Location

Project Name
UC Equipment Matching Funds Program
Project Description
No description, but project cited at http://animalscience.ucdavis.edu/faculty/Mitloehner/pdf/Grants.pdf

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	UC Davis, Chancellor for Research	\$140,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
20	Manure Digester	February 2009	Completed
Report Location	http://www.energy.ca.gov/2009publications/CEC-500-2009-009/CEC-500-2009-009.PDF		

Project Name
Covered Lagoon Digester Emission Measurements
Project Description
Measurements of NH3, methane, and VOCs at dairies with CEC funded dairy digester installations. Evaluates the Dairy Power Production Program (DPPP). The DPPP was initiated to encourage the development of biologically based anaerobic digestion and gasification ("iogas") electricity generation projects on California dairies.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Dairy Power Production Program	Western United Resource Dev't, Inc.	CEC, PIER	\$500,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
Related info 2

California Air Resources Board

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Project ID	Project Type	Estimated Completion Date	Status
22	PM Emissions	2005	Completed

Report Location	http://www.reeis.usda.gov/web/crisprojectpages/192080.html . Contians citations for J. Air & Waste Manage. Assoc. 55:816-825 and J. Air & Waste Manage. Assoc. 55:826-833
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Project Name

Agricultural sources of PM10 and ozone precursors

Project Description

Compile PM10 and NH3 emission factors. Measure concentrations of VOC relevent to to ozone formation upwind and downwind of dairies

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
R. Flocchini	UC Davis	USDA	\$374,145
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
C. Parnell	Texas A&M		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
R. Higashi	UC Davis		

Related info 1

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Related info 2

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California Air Resources Board **Summary of Agricultural Emissions Studies**

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Project ID	Project Type	Estimated Completion Date	Status
23	Emissions Modeling	June 2007	In progress

Report Location
page 259 at: http://www.ncsu.edu/airworkshop/Ag_Air_Quality_Modeling.pdf

Project Name
Developing a Process Based Model for GHG for California Dairies

Project Description
Using biological principles and mass balance, develop a cradle-to-grave emissions model to provide greenhouse gas emissions estimates for dairies.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	CEC PIER	\$119,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
W. Salas	Univ. New Hampshire		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
R. Zhang	UC Davis		

Related info 1
Funded with \$500,000 total - \$119,00 for Mitloehner portion

Related info 2
http://www.westerndairies.org/2009symposium/Mitloehner.pdf

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Project ID	Project Type	Estimated Completion Date	Status
24	Livestock Study	2005	Completed

Report Location	EPA conference at: http://www.epa.gov/ttn/chief/conference/ei14/index.html (search Zhang)
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Project Name
Development of a Process-Based Ammonia Model for Livestock Sources
Project Description
Develop a process-based model of ammonia emissions from five types of animal feeding operations: dairy, beef, swine, chicken, and turkey.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
G. Tonneson	UC Riverside	LADCO	\$250,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
Z. Wang	UC Davis	Lake Michigan Air Directors Consortium	
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
G. Mansell	ENVIRON Int'l Corp.		

Related info 1
Other researchers - J. Fadel, R. Zhang, G. Mansell, J. Haasbeek.

Related info 2
Abstract on page 9 at: http://www.epa.gov/ttn/chief/conference/ei14/final2005.pdf

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Project ID	Project Type	Estimated Completion Date	Status
25	Education Study	March 2005	Completed
Report Location	http://www.cdqa.org/reports/CDQAP%20Annual%20Report%202005.pdf		

Project Name
Development of an Air Module Curriculum for the California Dairy Quality Assurance Program (CDQAP)
Project Description

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	US EPA	\$50,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
D. Meyer	UC Davis, CDQAP		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
M. Payne			

Related info 1
http://www.4cleanair.org/Documents/APCODetermination.pdf
Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
26	Ammonia Emissions	December 2005	Completed

Report Location
http://www.pranalytica.com/pdf/MST-16-1547-2005.pdf

Project Name
Laser-based Sensors for Monitoring Ammonia Emissions

Project Description
A trace-gas sensor based on fibre-amplifier enhanced photoacoustic spectroscopy has been developed for measuring ambient ammonia in agricultural settings. Field testing was performed in environmental chambers at UC Davis where the excreta from three Holstein cows were allowed to accumulate, providing a source of ambient ammonia.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Patel	Pranalytica	USDA - SBIR I	\$20,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
F. Mitloehner	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
\$79,000 total; \$20,000 for Mitloehner portion

Related info 2
Institute of Physics Publishing, Meas. Sci. Technol. 16 (2005) 1547-1553

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Project ID	Project Type	Estimated Completion Date	Status
27	Ammonia Emisions	December 2006	Completed

Report Location <http://www.iop.org/EJ/abstract/0957-0233/16/8/002>

Project Name

Laser-based Sensors for Monitoring Ammonia Emissions

Project Description

A trace-gas sensor based on fibre-amplifier enhanced photoacoustic spectroscopy has been developed for measuring ambient ammonia in agricultural settings. Field testing was performed in environmental chambers at UC Davis where the excreta from three Holstein cows were allowed to accumulate, providing a source of ambient ammonia.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Patel	Pranalytica	USDA - SBIR II	\$75,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
F. Mitloehner	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

\$350,000 (\$75,000 for Mitloehner portion)

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
28	Livestock Study	July 2005	Completed

Report Location	08/24/07 Pork Board abstract: http://www.pork.org/PorkScience/Research/Documents/03-159-MITLOEHNER.ABS.8-27-04.pdf
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Project Name

Effect of Atmospheric Ammonia on Pig Welfare

Project Description

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	National Pork Board	\$40,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
29	Worker Exposure	September 2011	In progress

Report Location

Project Name

Respiratory Exposures and Health of Workers on California Dairies (NIOSH)

Project Description

Monitor exposures of 200 dairy workers at large dairies to dust and ammonia to define the concentrations of any airborne pollutants highly associated with respiratory problems.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	NIOSH	\$1,700,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
M. Schenker	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
D. Bennett			

Related info 1

UC Davis' program - CA Dairy Environ Health Research Initiative (Cal-DEHRI)

Related info 2

Field phase in progress, June 2008

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Project ID	Project Type	Estimated Completion Date	Status
30	Pesticide Study	February 2006	Completed

Report Location Report of Jan. 10, 2007 available at: <http://www.arb.ca.gov/research/apr/past/04-334.pdf>

Project Name
Investigation of Atmospheric Ozone Impacts of Selected Pesticides
Project Description
Develop methods for estimating and quantifying ozone impacts for selected pesticide compounds for which such estimates are not currently available.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
W. Carter	UC Riverside	ARB	\$100,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
31	Pesticide Study	June 2007	Completed

Report Location <http://www.reeis.usda.gov/web/crisprojectpages/204179.html>

Project Name
Agricultural Pesticide VOC Sources and their Photochemical Ozone Formation Potential
Project Description
Improve current understanding of the photochemical O3 formation potential of VOCs from agricultural pesticide applications in the San Joaquin Valley.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
B. Flocchini	UC Davis	USDA	\$400,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
R. Higashi	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
M. Kleeman	UC Davis		

Related info 1
http://airquality.ucdavis.edu/pages/events/2008/green_acres/GREEN.pdf

Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
32	Emissions Mitigation	2005	Completed
Report Location	http://mbao.org/2005/MBAO%202005%20pdfs/Preplant/8/Sullivan.pdf		

Project Name
Commercialization of Intermittent Water Sealing
Project Description
Identify optimal water management strategies for water sealing commercial-scale application of fumigants.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
D. Sullivan	Sullivan Environmental Consulting	USDA	\$78,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
H. Ajwa			
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
J. Radewald			

Related info 1
CDPR participated in the study
Related info 2

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Project ID	Project Type	Estimated Completion Date	Status
33	Ammonia Emisions	December 2005	Completed

Report Location	http://www.epa.gov/ttn/chief/conference/ei12/part/krauter.pdf (2003)
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Project Name
Improved Statewide Estimates of Ammonia Emissions from Native Soils in California

Project Description
Develop California specific ammonia emission factors and modeling for native soils within California

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Krauter	CSU Fresno	ARB	\$200,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
C. Potter	NASA Ames		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
S. Klooster	CSU Monterey		

Related info 1
http://geo.arc.nasa.gov/sge/casa/regional/california.html

Related info 2

California Air Resources Board **Summary of Agricultural Emissions Studies**

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
34	Crop Study	June 2005	Completed

Report Location	Partial, 2005 EPA conference. http://www.epa.gov/ttn/chief/conference/ei14/index.html (search Krauter)
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Project Name
Monitoring of Ammonia Emissions from Crop Production With a Tunable Diode Laser

Project Description
Evaluate the use of a TDL system for the determination of ambient ammonia levels and ammonia emissions from specific agricultural operations.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Krauter	CSU Fresno	CSU Agricultural Research Initiative	\$296,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
D. Goorahoo	CSU Fresno		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
B. Goodrich	CSU Fresno		

Related info 1
\$296,000 ARI to match ARB and UniSearch funding

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
35	PM Emissions	2011 (CA in 2009)	In Progress

Report Location	Quarterly reports submitted during research phase
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Project Name
Cotton Gin PM Emissions Research
Project Description
Evaluate the accuracy of US EPA's sampling methods which may significantly over-estimate PM emissions (CTM-039, P 2.5 Stack Sampling Method). Develop PM dispersion models for PM10, PM2.5, total suspended particulates (TSP). Characterize particle size, shape. Six test sites, 1 in CA.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
M. Buser	USDA ARS Lubbock TX	Various cotton industry and ginners associations	\$147,500
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
D. Whitelock	ARS - SWCotton Ginning Research Lab, ARS	ARB	\$45,000
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
C. Boykin	Cotton Ginning Research Unit, Greenville, AL	SJVAPCD	\$36,000

Related info 1

Related info 2

California Air Resources Board
Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
36	PM Emissions	2010	In Progress

Report Location

Project Name
Evaluation of PM Emissions from Raisin Harvesting
Project Description
Evaluate emissions from three different table grape harvesting techniques

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Krauter	CSU Fresno	??	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
J. Siliznoff			
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
37	Emissions Mitigation	2010	Drafting Rpeorts

Report Location	Draft report of Los Banos work is under reiew
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Project Name
Testing to Determine Emissions Reductions Achieved by Lower Emitting Agricultural Practices
Project Description
Evaluation of control effectiveness of two SJVAPCD Conservation Management Practices for PM (conservation tillage and combined operations)

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
		US EPA RARE	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
38	N2O Emissions	2011	In Progress

Report Location

Project Name
Fertilizer N2O Research, Assessment of Baseline Nitrous Oxide and Nitric Oxide Emissions in California Cropping Systems

Project Description
Researchers are coordinating study goals and methods to evaluate flux emissions of N2O using typical fertilizer practices for each crop. Work began in June 2009. Crops include almonds, walnuts, lettuce, rice, tomatoes, alfalfa, sweet and field corn, cotton, wheat, grapes.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
W. Horwath	UC Davis	ARB	\$83,500
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
J. Six	UC Davis	CEC	
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
D. Goorahoo	CSU Fresno	CDFA	

Related info 1
Project selection dates: CEC 8/08, CDFA 10/08, ARB 11/08

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
39	VOC Emissions	October 2007	Completed

Report Location	presentation at CDPR, date unknown: http://www.cdpr.ca.gov/docs/emon/vocs/vocproj/voc_regional_ozone.pdf
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Project Name
DPR Round-Robin VOC Study

Project Description
Determine ways to improve VOC emission estimates for solvents in pesticide formulations by comparing the emissions under field conditions to emissions seen in traditional TGA testing. Results showed more ozone production on the downwind side, but only slightly. Most of the VOC increase after spraying is NOT from the solvent being regulated but from EtOH in fuel. To decrease ozone, NOx reduction more important than VOC reduction.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
P. Green	UC Davis	None; cooperative effort of industry including European partners	\$0
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
40	VOC Emissions	December 2009	Draft Report

Report Location

Project Name
Reducing Emissions of VOCs from Agricultural Soil Fumigation, ARB contract 05-351
Project Description
Develop estimates for cumulative and hourly emissions rates from laboratory, field plot and predictive models which will be compared to previous large-scale field experiments on several emission reduction strategies

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Jay Gan	UC Riverside	ARB	\$200,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
Scott Yates	USDA-Riverside	USDA-ARS?	
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
		SJVAPCD?	

Related info 1
ARB agreement 05-351

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
41	Manure Digester	August 2001	Completed

Report Location	http://www.arb.ca.gov/app/library/libcc.php (Search on author = Flocchini)
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Project Name
Interim Report: Sources and Sinks of PM10 in the San Joaquin Valley, August 2001
Project Description
Evaluate on-field PM10 emissions. Evaluate PM10 and ammonia emissions for feedlots and dairies.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
R. Flocchini	UC Davis	USDA	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
T. Cassel	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
42	Ammonia Emisions	June 2001	Completed

Report Location	http://www.arb.ca.gov/app/library/libcc.php (search on author = Potter)
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Project Name
Statewide Inventory Estimates of Ammonia Emissions from Native Soils and Chemical Fertilizers in California
Project Description
Measure and model ammonia emissions from agricultural fertilizer application and natural soils. Report available at: ftp://ftp.arb.ca.gov/carbis/reports/l522.pdf

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Krauter	CSU Fresno	ARB	\$186,425
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
C. Potter	NASA Ames		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
S. Klooster	CSU Monterey		

Related info 1

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
43	PM Emissions	June 1996	Completed
Report Location	http://www.epa.gov/ttn/chief/conference/ei14/session1/schmidt.pdf		

Project Name
Results of the Measurement of PM10 Precursor Compounds from Dairy Industry Livestock Waste
Project Description
Using environmental flux chambers, evaluate dairy ammonia and ROG emissions.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Schmidt	Consultant	South Coast AQMD	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
http://www.aqmd.gov/rules/proposed/pr1127.html
Related info 2

California Air Resources Board
Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
44	VOC Emissions	January 1995	Completed

Report Location

Project Name
Results of the Measurement of Volatile Organic Compounds from Livestock Wastes
Project Description
Evaluate process specific VOCs from dairies in the Sacramento region.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Schmidt	Consultant	US EPA	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
http://www.4cleanair.org/Documents/APCODetermination.pdf

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
45	Dairy Waste Management	January 2002	Completed

Report Location	http://www.aqmd.gov/rules/support.html
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Project Name
Survey Current Livestock Waste Management Practices in the South Coast Air Basin
Project Description
Evaluate manure management practices in the SCAQMD http://www.aqmd.gov/rules/proposed/pr1127.html

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Egigian-Nichols	Tetra Tech Inc	South Coast AQMD	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
46	Livestock Waste Management	March 2003	Completed

Report Location	http://www.aqmd.gov/rules/support.html
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Project Name
Literature Survey and National Programs, Livestock Waste Management Practices Survey and Control Option Assessment
Project Description
Literature survey of waste management and control options. http://www.aqmd.gov/rules/proposed/pr1127.html

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Egigian-Nichols	Tetra Tech Inc	South Coast AQMD	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board
Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
47	Livestock Waste Management	March 2003	Completed

Report Location	http://www.aqmd.gov/rules/support.html
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Project Name
Identify Potential Waste Management Practices Reducing Ammonia and VOCs, Livestock Waste Management Practices Survey and Control Option Assessment
Project Description
Identify livestock practices to reduce emissions. http://www.aqmd.gov/rules/proposed/pr1127.html

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Egigian-Nichols	Tetra Tech Inc	South Coast AQMD	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
48	Livestock Waste Management	December 2003	Completed
Report Location	http://amarillo.tamu.edu/~bauvermann/ConferenceProceedings/effectofsprinkling.pdf		

Project Name
Emissions of Particulate Matter and Ammonia from Cattle Feedyards and Dairies: a Texas-California Partnership
Project Description
Quantify the effects of water application and manure harvest frequency on PM and NH3 emission from dry lots housing beef or dairy animals (heifers).

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
B. Auvermann	Texas CEC	National Center for Manure and Animal Waste Management	\$12,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
W. Harman	UC Davis		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
D. Meyer	UC Davis		

Related info 1
http://amarillo.tamu.edu/~bauvermann/ConferenceProceedings/index.htm
Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
49	Dairy Emissions	Complete	Completed

Report Location Technical Memorandum at: <http://www.arb.ca.gov/ag/caf/SchmidtDairyTestData2005.pdf>

Project Name

Evaluating Dairy Process Emissions Using Flux Chambers

Project Description

Using environmental flux chambers at a working dairy, evaluate relative emission levels of individual process including lagoons, flush lanes, and corrals.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
CE Schmidt	Contractor	ARB	\$50,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
		SJVAPCD	
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

<http://www.4cleanair.org/Documents/APCODetermination.pdf>

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
50	Dairy Emissions	December 2005	Completed

Report Location
Final Report May 31, 2006. http://www.arb.ca.gov/ag/caf/MitloehnerDairyChamberEmissions2006.pdf

Project Name
Measuring Dairy Cow Emissions in an Environmental Chamber
Project Description
Place cows into an environmentally controlled chamber and evaluate speciated VOC emissions emitted directly from cows and from fresh waste products.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	US EPA	\$75,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
R. Flocchini			
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
J. Peters			

Related info 1
http://www.4cleanair.org/Documents/APCODetermination.pdf

Related info 2
J Environ Qual 37:615-622 (2008)

California Air Resources Board Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
51	Dairy Emissions		Completed

Report Location <http://www.arb.ca.gov/ag/caf/MitloehnerDairyChamberEmissions2006.pdf>

Project Name
Volatile Fatty Acids, Amine, and Phenol Emissions from Cows and their Waste

Project Description

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
F. Mitloehner	UC Davis	ARB	\$200,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
S. Trabue	USDA ARS		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
J. Koziel	ISU		

Related info 1
<http://www.4cleanair.org/Documents/APCODetermination.pdf>

Related info 2
<http://jeq.sciijournals.org/cgi/content/full/37/2/615>

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
52	PM Emissions	June 2004	Completed

Report Location
abstract available at: http://asae.frymulti.com/abstract.asp?aid=20039&t=2

Project Name
Improvement of PM10 emission factors for almond harvesting
Project Description
Refine existing PM10 emission factors for almond harvesting. Estimates based on measured PM10 during almond sweeping and pick up.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
R. Flocchini	UC Davis	Almond Board of California	
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
C. Parnell	Texas A&M		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1
Results showed that in all instances, the concentrations obtained from using the PM10 sampler were always higher than those obtained from using the TSP sampler.

Related info 2
Contact Terry Cassel, UCD to see if report available: tacassel@ucdavis.edu

California Air Resources Board

Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
53	VOC Emissions	July 2007	Completed

Report Location
http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VH3-4S0YXTM-2&_user=1928924&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_version=1&_urlVersion=0&_userid=1928924&md5=e020b1203499a23d500c0127b4460438

Project Name

Photochemical Ozone Formation Potential of Agricultural VOC Sources

Project Description

Ozone formation potential of emissions from dairy cattle was much lower than predicted using regulatory profiles. The majority of the ozone formation is explained by ethanol (EtOH) emissions, not by acetone as previously thought. Ozone formation potential is generally small (<20 ppb) when EtOH conc. were 200 ppb and NOx conc. were 50 ppb. Results suggest that decreasing ROG (VOC) from dairy cattle, specifically by decreasing EtOH conc., will not likely lead to decreased ozone in the SJV.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
P. Green		USDA	\$300,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
F. Mitloehner			
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
R. Flocchini			

Related info 1

presentation at CDPR, date unknown:
http://www.cdpr.ca.gov/docs/emon/vocs/vocproj/voc_regional_ozone.pdf

Related info 2

Alternate site for report: Go to <http://dx.doi.org> and enter "doi:10.1016/j.atmosenv.2008.02.064"

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
54	Livestock Emissions	May 2005	Completed

Report Location
http://www.arb.ca.gov/ag/caf/poulemisrpt.pdf

Project Name
Measuring Broiler Emissions in Tunnel Ventilated Housing
Project Description
Measure PM10, ammonia, and speciated TOG emissions emitted from a tunnel ventilated broiler house during various stages of bird growth.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
M. Summers	CDFA	California Poultry Federation	\$40,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
D. Duke	Foster Farms		
PI 3	Affiliation PI 3	Fund Source 3	Amount 3

Related info 1

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
55	VOC Emissions	December 2005	Completed

Report Location	Results at 2005 US EPA Emissions Inventory Conference - http://www.airquality.nrcs.usda.gov/AAQTF/Documents/Amarillo_2005/Presentation-CA%20Dairy%20ROGs%20(Krauter%20AAQTF%20Amarillo%2006-05).pdf
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Project Name	Evaluating Dairy Reactive Organic Gas Emissions
Project Description	Chemically speciate ROG samples collected at dairies. Attempt to develop emission factors for dairies and some individually tested dairy processes. Further study continues in 2005-2008.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
C. Krauter	CSU Fresno	ARB	\$100,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
D. Goorahoo	CSU Fresno	CSU Foundation	\$20,000
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
B. Goodrich	CSU Fresno		

Related info 1	http://www.4cleanair.org/Documents/APCODetermination.pdf
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Related info 2	http://www.epa.gov/ttn/chief/conference/ei15/session6/beene.pdf
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California Air Resources Board **Summary of Agricultural Emissions Studies**

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
56	Manure Study	September 2008	In progress

Report Location (When available) <http://www.epa.gov/region09/ag/dairy/technologies.html>

Project Name

Dairy Wastewater Treatment Feasibility Study

Project Description

Assess the feasibility of applying standard wastewater treatment technology to the management of manure from cows in typical California dairies. EPA plans to incorporate this information into its on-going assessment of technologies for dairy manure management.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Trygve Lundquist	Cal-Poly SLO	US EPA	\$19,936
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
			\$0
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
			\$0

Related info 1

<http://www.arb.ca.gov/ag/cafdairypanel/dairypanel.htm>

Related info 2

<http://works.bepress.com/tlundqui/2/>

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
57	VOC Emissions	December 2011	In progress

Report Location	Progress reports began in 2009
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Project Name
Reducing Emissions of VOCs from Agricultural Soil Fumigation: Comparing Emission Estimates from Simplified Methodology, ARB contract 07-322
Project Description
For a single soil, determine the extent to which laboratory and modeling studies can simulate field emission data. Extend the range of emission reduction strategies assessable in the field using the laboratory and modeling approaches.

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Scott Yates	USDA-ARS-Riverside	ARB	\$100,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
Daniel Ashworth	USDA-ARS	DPR	\$50,000
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
			\$0

Related info 1
ARB agreement 07-332

Related info 2
USDA project 5310-12130-008-05

California Air Resources Board

Summary of Agricultural Emissions Studies

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Project ID	Project Type	Estimated Completion Date	Status
58	Non-Ag VOC Emissions	January 2010	Draft Report

Report Location

Project Name
Emission of GHGs Resulting from Greenwaste Composting

Project Description
Construct 5 windrows, monitor oxygen, pH, ammonia, nitrate, nitrite, nitric oxide, methane, hydrogen sulfide and moisture at the core of the windrows; collect emission flux samples using a isolation flux chamber and analyze samples for methane, carbon dioxide, nitrous oxide, and IVMNEOC for 100 days

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
Fatih Buyuksonmez	UC San Diego	SJVAPCD	\$198,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
			\$0
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
			\$0

Related info 1

Related info 2

California Air Resources Board Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
59	Livestock Emissions	April 2010	In Progress

Report Location

Project Name
NAEMS Project: Air Emissions from California Layer Farms

Project Description
This project is for conducting a two-year measurement and monitoring of air emissions from a layer farm in CA. The emissions from two mechanically ventilated layer houses are measured. The houses have approximately 68,000 hens in cages. The measured emissions include ammonia, hydrogen sulfide, carbon dioxide, volatile organic compounds, total suspended particulates, PM2.5 and PM10. In addition, the detailed information and data are collected on ventilation, indoor and outdoor environmental

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
R. Zhang	UC Davis	Ag Air Research Council	\$199,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
			\$0
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
			\$0

Related info 1

Related info 2

California Air Resources Board

Summary of Agricultural Emissions Studies

1/29/2010

Project ID	Project Type	Estimated Completion Date	Status
60	Livestock Emissions	April 2010	In Progress

Report Location

Project Name
NAEMS Project: Air Emissions from California Broiler Farms

Project Description
This project is for conducting a two-year measurement and monitoring of air emissions from a broiler farm in CA. The emissions from two mechanically ventilated broiler barns are measured. The two broiler barns house about 42,000 broilers in each chicken production cycle. The measured emissions include ammonia, hydrogen sulfide, carbon dioxide, methane, nitrous oxide, ethanol, volatile organic compounds, total suspended particulates, PM2.5 and PM10. In addition, the detailed information and data are

PI 1	Affiliation PI 1	Fund Source 1	Amount 1
R. Zhang	UC Davis	Ag Air Research Council	\$219,000
PI 2	Affiliation PI 2	Fund Source 2	Amount 2
			\$0
PI 3	Affiliation PI 3	Fund Source 3	Amount 3
			\$0

Related info 1

Related info 2